UNPUBLISHED
RESEARCH
REPORTS

INTERMOUNTAIN STATION
Central Reference File
No. 3.404

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

MATERIALS FOR, AND CONSTRUCTION OF THE FUNNEL TYPE OF TREE CAGE

U. S. GOVERNMENT PRINTING OFFICE: 1928 J 76133

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1115 - 1141-23

Berkeley, California, March 10, 1934

Dr.F.C.Craighead,

Washington, D.C.:

Dear Dr.Craighead:

Enclosed is a description of the cage equipment which was used by Salman and Furniss in the lifehistory work last season. This cage was designed by Keen and Buckhorn and we wish to disclaim any credit whatever for originality as inventors of the idea. This description has been worked up as a guide for use in the field next season as we are planning to install a number of the cages both on the Modoc and Sierra. Deleon is also planning to use a series in the study of the Douglas fir infestation in the Yosemite and has had a set made up for the Park Service.

We will need more screen to go with these cages and would like to have you order a 100'roll of the 18 or 20 mesh for us in the East as this fine mesh screen is not made up out here. The 36 inch with is better adapted to use with these tree cages than the 48 inch we prefer that the order be placed for the 36 inch with if it is obtainable.

Very sincerely yours,

J.M.Miller,
Senior Entomologist.

F C Evenden

MATERIALS FOR, AND CONSTRUCTION OF THE FUNNEL TYPE OF TREE CAGE

MATERIALS

CONSTRUCTION OF CAGE:

1 metal funnel.
Copper-wire screen, 3' wide X 4' 2" long, 18 or 20 mesh.
1 metal strip 2½" wide X 22" long.
1 gasoline torch or Coleman gasoline stove.
1 soldering iron.
Solder with acid core (about 1# roll to six cages).
1 pair of tin snips.
1 ruler.

ERECTION OF CAGE:

1 cage including funnel, screen and metal strip.
1 heavy galvanized wire bracket.
1 roll of absorbent cotton.
2 wooden strips, 1½" X ¾" X 4' 6".
Supply of small wooden washers, 1½" X 1½" X ⅛".
1 small candy jar with top cut to cinch upon the funnel.
1 ladder.
1 hammer.
1 saw.
1 hatchet with straight face.
Supply of 8-penny nails.
Supply of shingle nails.

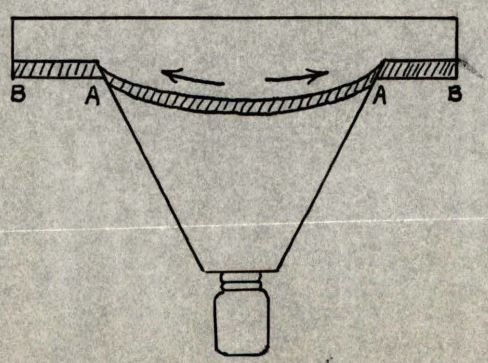
PROCEDURE

CONSTRUCTION OF CAGE:

Cut copper-wire screen into 4' 2" lengths.

Solder a length of screen to the funnel as indicated by the shaded areas on the diagram below. Work both ways from the center to prevent buckling of the screen. Some difficulty may develop at point A but a liberal application of solder will prevent any tendency of the screen to pull away. From A to B there will be some overlap of screen which should be soldered to the back side of the flange in order to make the connection really secure.

Solder the metal strip to the top of the screen, taking care to center it.



ERECTION OF CAGE:

Make a horizontal saw-cut long enough to accomodate the collar of the funnel on the selected tree at the desired point on the tree, 9 to 10 feet above the surface of the ground. Smooth out the bark irregularities with the hatchet. Place a strip of cotton 1½" wide X 22" long flush against the saw-cut and tack in place with shingle nails. Nail the funnel over the cotton and flush against the saw-cut by driving 8-penny nails into the collar through the wooden washers which have been soaked in water to prevent splitting. Three of these washers should suffice for this. The wooden washers serve a very real purpose in that they draw the metal against the tree tighter than would otherwise be possible. In addition they are of very great aid in taking down the cages without mutilating them.

Mark with the hatchet the remainder of the outline of the area to be caged using the wooden strips for guides. Shave down the bark with the hatchet to make the whole outline smooth, taking care not to cut into the phloem which might cause abnormal drying. Any deep irregularities can be filled in with wads of cotton. The accompanying photograph illustrates the amount of shaving that will be necessary on the average tree. Tack strips of cotton around the outline as was done beneath the funnel. Nail the wire bracket into place about 4" below the top of the area to be caged. This bracket should stand out from the tree three inches or more and should extend nearly to the sides of the cage. The diagram below illustrates the shape of bracket found to be best at Hackamore.

The metal strip with the screen attached should next be drawn up over the wire bracket and nailed into place using the long nails and wooden washers as when fastening the funnel to the tree. The wooden strips are then nailed along the sides of the cage. If the strips are previously soaked in water, a very tight connection can be obtained without undue splitting of the strips.

It was found best to cinch the candy jar top into place as the last step, otherwise a large amount of bark and other debris will lodge in the funnel during the erection of the cage and considerable difficulty will be experienced in the removal of this material. In addition, the tops are subject to considerable rough handling when applied before the cage is in place. The tops are very light and can be bent onto the funnel with the thumb and forefinger. The diagram below illustrates how the top should be cut and bent. Cut along the solid lines and bent along the dotted ones. (see next page for diagram.)

At Hackamore it was unnecessary to place water in the collection jars because collections were made often and furthermore the sun killed nearly everything in the jars each day by noon. If living uninjured adults are to be collected from the jars they should be shaded with a hood. Dry pine needles introduced into the jars will prevent the beetles from damaging each other seriously.

If this type of cage is to be used for introduction of beetles, the screen should be considerably longer, about 10 to 12 feet. Larger cages then this are very difficult to put up. The point of introduction should be about midway of the cage. A small wooden shelf nailed to the bark of the tree before the cage is erected gives the beetles a foothold so that the vigorous ones seldom fall down into the funnel. Most of the crippled beetles will ultimately find their way into the funnel where they can be counted and removed.

JAR TOP